ASSESSING HOW FINTECH PEER-TO-PEER LENDING, BANKING DIGITIZATION, AND BANKING CREDIT RISK AFFECT THE FINANCIAL PERFORMANCE OF INDONESIAN COMMERCIAL BANKS KBMI 4 IN DIGITAL ERA

Anggun Wida Prawira[1*], Heni Susilowati[2], Ratnaningrum[3]

[1] Management Study Program,
College of Economics Modern Economic Studies (STIE STEKOM) Kartasura
Jl. Diponegoro No.69, Dusun I, Wirogunan, Kec. Kartasura, Kabupaten Sukoharjo, Central Java, 57166, Indonesia, awprawira21@gmail.com
[2] Management Study Program,
College of Economics Modern Economic Studies (STIE STEKOM) Kartasura
Jl. Diponegoro No.69, Dusun I, Wirogunan, Kec. Kartasura, Kabupaten Sukoharjo, Central Java, 57166, Indonesia, heni@stiestekom.ac.id
[3] Management Study Program,
College of Economics Modern Economic Studies (STIE STEKOM) Kartasura
Jl. Diponegoro No.69, Dusun I, Wirogunan, Kec. Kartasura, Kabupaten Sukoharjo, Central Java, 57166, Indonesia, ratnaningrumsurakarta@gmail.com

Abstract

This study aims to determine and analyses the effect of Fintech Peer to Peer Lending, Bank Digitization and Non-Performing Loans on Banking Financial Performance (Return on Asset) at KBMI 4 Commercial Banks in 2019-2023. This type of research is descriptive with quantitative analysis. The object of the research is the audited financial report of Bank Umum KBMI 4 listed on the Indonesia Stock Exchange and the report from the Financial Services Authority. The sample was selected using the Purposive Sampling technique. Data analysis techniques using multiple linear regression analysis. Findings: P2P Lending has a negative and significant effect on Return on Assets. Bank Digitization does not have a positive and significant effect on Return on Assets. Non-Performing Loans have a negative and significant effect on Return on Assets. Peer to Peer Lending, Banking Digitization, Non-Performing Loan simultaneously have a significant effect on Return on Assets. Banks in KBMI Category 4 must carry out Product Innovation to compete with P2P lending. By establishing Partnerships, conducting Market Segment Approaches, developing Digitization: and using big data and analytics. By implementing these strategies, banks remain relevant and competitive in the digital era.

Keywords: Fintech Peer to Peer Lending, Bank Digitization, Non-Performing Loans, Financial Performance.

INTRODUCTION

The development of the current industrial revolution 4.0 has brought about a transformation in the global economy, one of which is in the financial technology sector[1]. The digital transformation of finance brings new challenges that must be faced, including in the banking industry, the trend that occurs is that not a few customers have used digital banking services compared to traditional methods [2]. Financial services have become easier for customers to obtain using Fintech in Banking[3]. Fintech has an impact on bank profitability levels, especially for banks that have developed new services such as peer-to-peer (P2P) lending, M-banking, Internet banking, SMS banking, and phone banking [4]. The trend in the value of fintech P2P lending transactions has increased and shown growth in each monthly period from January 2022 of IDR 240,875,292 billion to December 2023 which was recorded at IDR 470,617,362 billion [5]. With the existence of P2P lending fintech services, people no longer need to save in banks or borrow from financial institutions. This shows that P2P Lending can be a competitor for banks with a new business model [6]. The results of the study showed that fintech P2P lending was able to positively influence the performance of Islamic banks in Indonesia [7]. Supported by [8] that fintech P2P Lending had a significant effect on Return on Equity. Meanwhile, the inconsistency of the study found that fintech P2P lending had a negative effect on bank

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profitability [9]. The development of fintech P2P lending financial technology companies has a negative effect on banking performance in Indonesia [10]. The results show that financial technology as measured by the fintech P2P lending indicator can negatively and significantly affect the profitability (ROA) of Commercial Banks [11]. The banking sector has undergone significant changes because of digitization. Bank Digitization offers more comprehensive banking services and a variety of convenient services for customers [12]. Digital payments are becoming an increasingly popular choice for the public [13]. As the market moves into the digital era, banks must respond by providing more digital services to capture a larger market share and enable them to compete with new fintech companies [14]. Bank Digitization and Fintech P2P Lending have a positive and insignificant impact on profits[15]. Bank digitization is one of the efforts of the banking industry to improve bank performance. Supported by[16] it shows that bank digitization has a positive and significant effect on profit. Likewise, the results [17] show that banking digitization has a significant effect on ROA. The implementation of a revenue diversification strategy will

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result in increased performance (ROA) [18]. Financial Services Authority Regulation (POJK) concerning Commercial Banks No.12/POJK.03/2021 labels banks in this category as Bank Group Based on Core Capital (KBMI) 4, with a minimum core capital of IDR 70 trillion[19]. ROA is a ratio to see how much a company can earn profit from the assets used. According to data from the Financial Services Authority (OJK), in the first semester of 2024, the bank's ability to generate net profit experienced a significant weakening, as seen from the decline in the return on assets (ROA), there was a decrease in ROA at Bank KBMI from 3.72% to 3.34%.
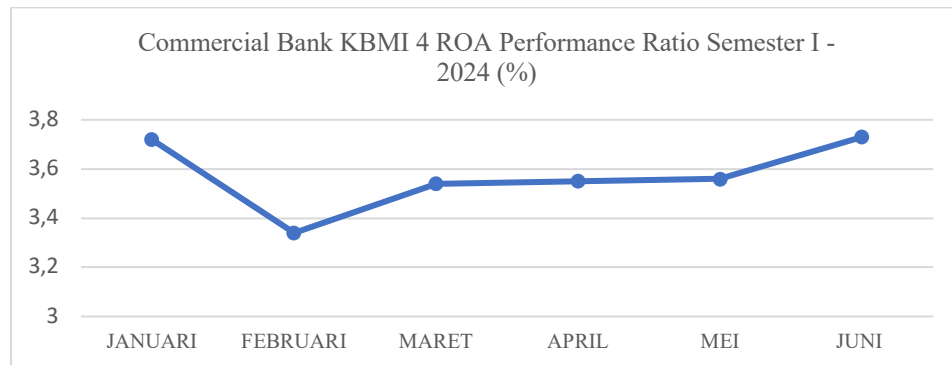

Figure 1. Commercial Bank KBMI 4 ROA Performance Ratio Semester I - 2024

This decrease shows the challenges faced by the banking sector in maintaining profitability performance [20]. Banking credit also the biggest source of risk for banking, which has an impact on the decline in banking performance, this condition is then known as Non-Performing Loan. [21]. Quoted from the OJK report, the value of credit NPL reached IDR 172.34 trillion, equivalent to 2.34% of total financing. The NPL ratio of commercial banks in May 2024 was slightly lower than the beginning of this year (2.35%) and compared to May last year (2.52%). [22]. NPL as regulated in Bank Indonesia the tolerance limit for the eligibility is 5% of the total banking credit. This can certainly be a signal to

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[20] Keuangan (OJK), 'Rapat Dewan Komisioner Bulanan Otoritas Jasa Keuangan (OJK)'.

[21] Eko; Astuti; Iskandar Kato; Edwin Basmar; Sudarmanto and Hengki Mangiring Parulian Simarmata; Yuniningsih; Irdawati Nugrahini; Susantinah Wisnujati; Valentine Siagian, *Manajemen Risiko Perbankan*, ed. by Ronal Watrianthos, *Penerbit Yayasan Kita Menulis*, 1st edn (Medan: Penerbit Yayasan Kita Menulis, 2021).

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banks, especially in the distribution of ineffective and inefficient credit [23]. If a bank has an NPL more than that which has been set, then the bank has poor performance because it has many risks of problematic credit. [24]. The purpose of this study is to determine the effect of P2P Lending on ROA at Bank Umum KBMI 4, to determine the effect of Bank Digitalization on ROA at Bank Umum KBMI 4, to determine the effect of NPL on ROA at Bank Umum KBMI 4, to determine the effect of Simultaneous P2P Lending, Bank Digitalization and NPL on ROA at Bank Umum KBMI 4. The novelty of this study lies in the synergy between the three variables. This interaction aspect can provide a better understanding of how these variables influence each other and contribute to the performance of Bank Umum KBMI 4. This article will discuss this gap by providing empirical evidence especially among Bank Umum KBMI 4 in Indonesia.

RESEARCH METHODS

This type of research is descriptive quantitative analysis. The object of the research is the audited financial report of Bank Umum KBMI 4 listed on the Indonesia Stock Exchange and the report from the Financial Services Authority. These four banks are PT Bank Mandiri (Persero) Tbk (BMRI), PT Bank Rakyat Indonesia (Persero) Tbk (BBRI), PT Bank Central Asia Tbk (BBCA) and PT Bank Negara Indonesia (Persero) Tbk (BBNI). As well as reports from the Financial Services Authority. The population all KBMI 4 Commercial Banks. The sample was selected by applying the Purposive Sampling Technique.

The criteria for selecting samples: [25]A). Banking Company Sub-Sector, KBMI 4 Category Commercial Banks listed on the Indonesia Stock Exchange. B). KBMI 4 Commercial Banks that apply Fintech services such as: Cash Management System, mobile banking, internet banking, SMS banking, QR Code, e-money, and ATM. C). KBMI 4 Commercial Banks that have published annual financial reports for the period 2019 to 2023 through the Indonesia Stock Exchange website, the observation period of 5 years, total value of $n = 60$ was obtained. This study uses secondary data type time series, uses documentation techniques with literature studies [26].

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[23] Sudarmanto and Siagian.

[24] Cahyo Cahyo, Sri Harjanto, and Putu Sulastri, 'Analisis Pengaruh Non Performing Loan (NPL) Dan Struktur Modal Terhadap Profitabillitas Yang Dimediasi Oleh Pertumbuhan Kredit (Studi Pada BPR Di Provinsi Jawa Tengah Periode Tahun 2019-2021)', *Jurnal Akuntan Publik*, 1.1 (2023), 66–89 <https://doi.org/10.59581/jap-widyakarya.v1i1.272>.

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Data analysis methods used Classical Assumption, Hypothesis Test, and multiple linear regression with SPSS software version 29. This study combines the synergy of 3 independent variables that are used as a reference or basis for improving the financial performance of banking Return on Assets (ROA), namely P2P Lending, Banking Digitization and Non-Performing Loans.
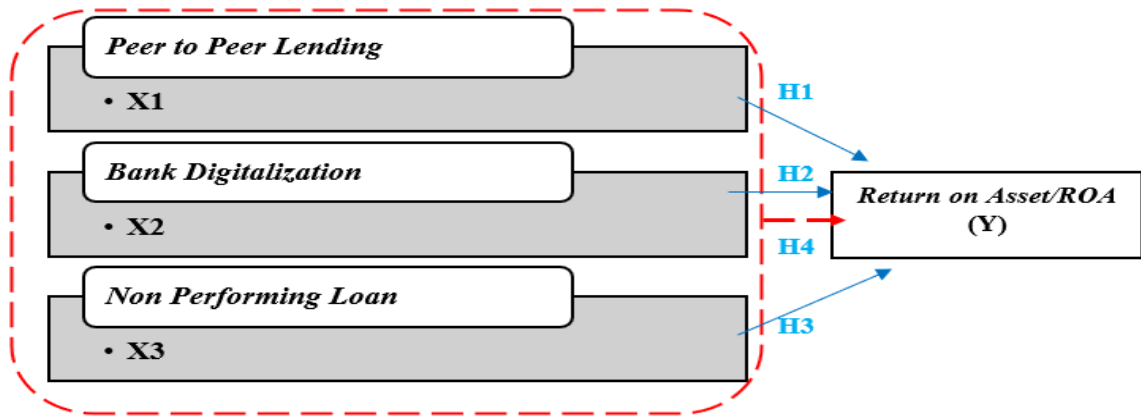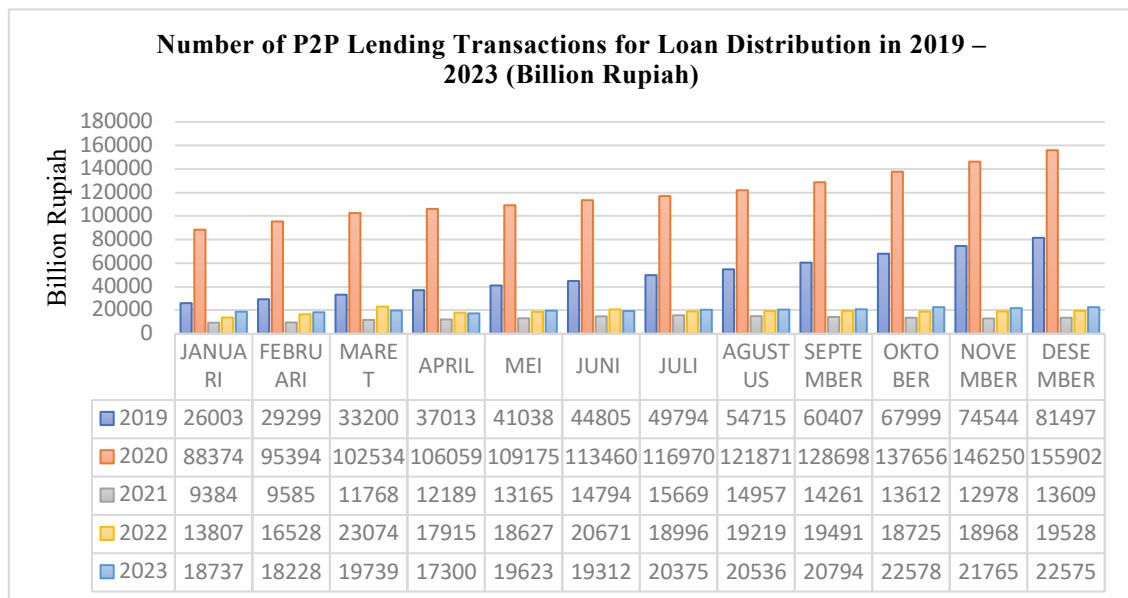

**Figure 2**. Conceptual Framework

RESULT AND DISCUSSION

Result

Table 1. Number of P2P Lending Transactions for Loan Distribution in 2019 – 2023

Number of P2P Lending Transactions for Loan Distribution in 2019 – 2023 (Billion Rupiah)

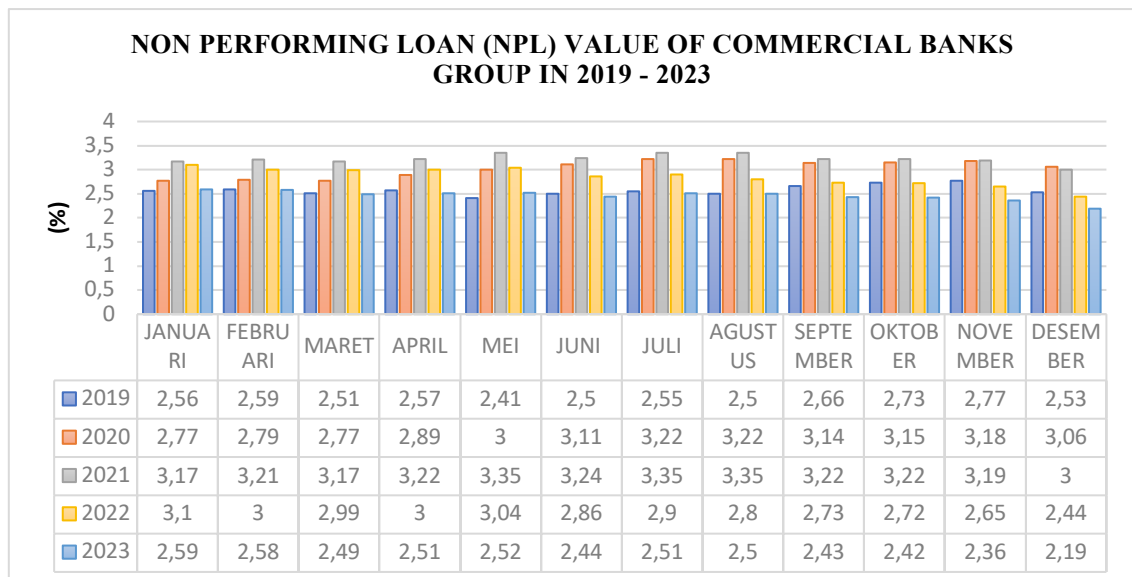|	JANUARI	FEBRUARI	MARET	APRIL	MEI	JUNI	JULI	AGUSTUS	SEPTEMBER	OKTOBER	NOVEMBER	DESEMBER
2019	26003	29299	33200	37013	41038	44805	49794	54715	60407	67999	74544	81497
2020	88374	95394	102534	106059	109175	113460	116970	121871	128698	137656	146250	155902
2021	9384	9585	11768	12189	13165	14794	15669	14957	14261	13612	12978	13609
2022	13807	16528	23074	17915	18627	20671	18996	19219	19491	18725	18968	19528
2023	18737	18228	19739	17300	19623	19312	20375	20536	20794	22578	21765	22575

Source: Secondary data from LPBBTI OJK processed by Researchers, 2024.

**Table 2.** Number of Digital Bank Transactions in 2019 – 2023
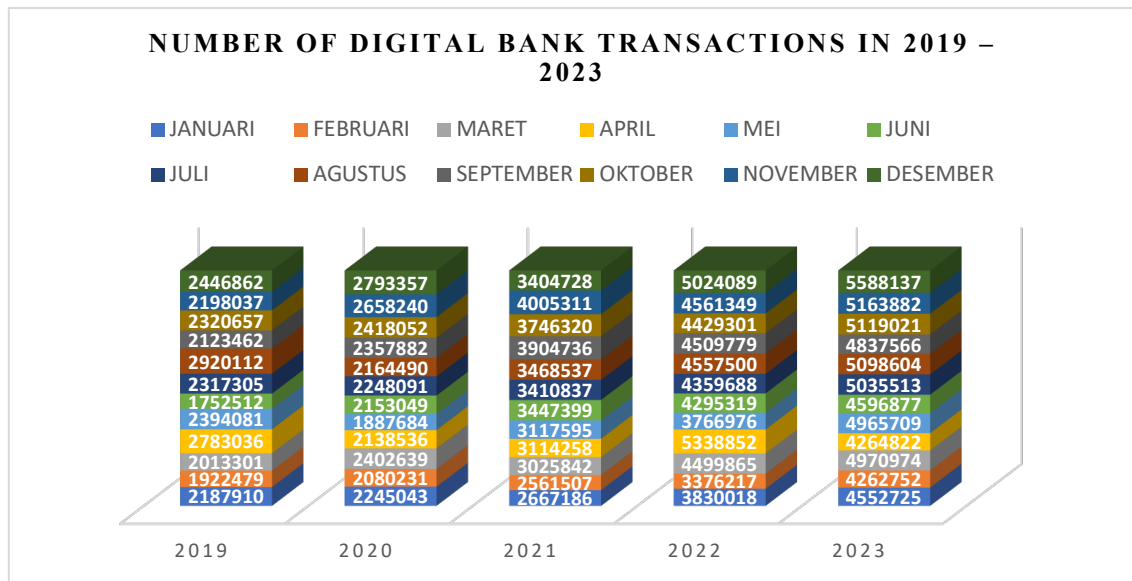
Source: Secondary data from SPPI Bank Indonesia processed by Researchers, 2024.

Table 3. Non-Performing Loan (NPL) Value of Commercial Banks Group In 2019 - 2023

	JANUARI	FEBRUARI	MARET	APRIL	MEI	JUNI	JULI	AGUSTUS	SEPTEMBER	OKTOBER	NOVEMBER	DESEMBER
2019	2,56	2,59	2,51	2,57	2,41	2,5	2,55	2,5	2,66	2,73	2,77	2,53
2020	2,77	2,79	2,77	2,89	3	3,11	3,22	3,22	3,14	3,15	3,18	3,06
2021	3,17	3,21	3,17	3,22	3,35	3,24	3,35	3,35	3,22	3,22	3,19	3
2022	3,1	3	2,99	3	3,04	2,86	2,9	2,8	2,73	2,72	2,65	2,44
2023	2,59	2,58	2,49	2,51	2,52	2,44	2,51	2,5	2,43	2,42	2,36	2,19

Source: Secondary data from LSPI OJK processed by Researchers, 2024.

Table 4. Return On Assets (Roa) Value of Bank Group Based On Core Capital (Kbmi) 4 Years 2019 - 2023 (%)
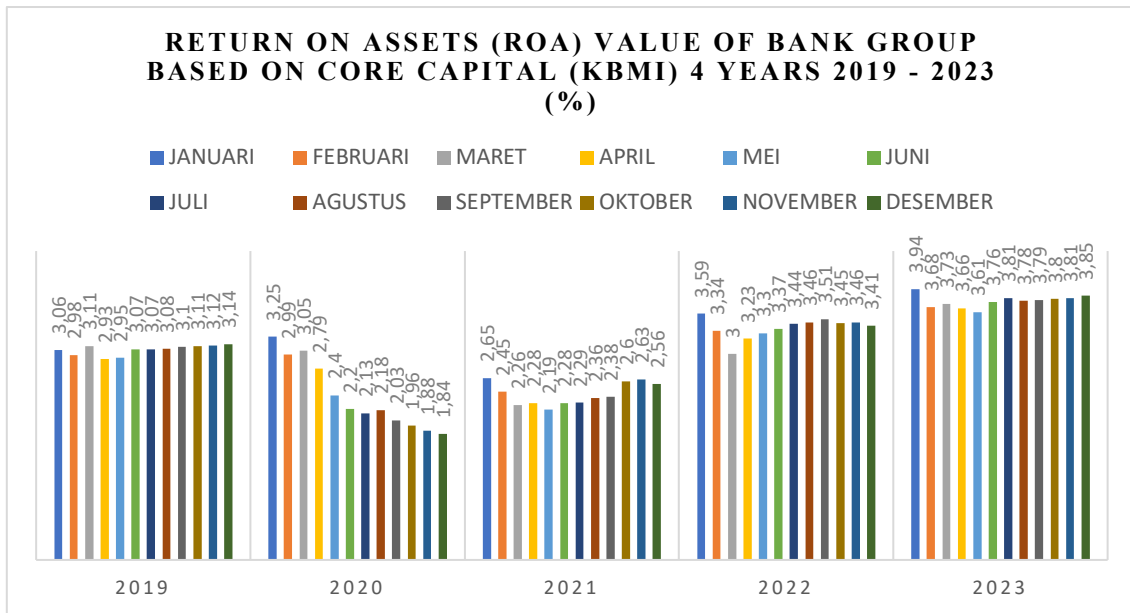
Source: Secondary data from the Indonesia Stock Exchange processed by Researchers, 2024.

Classical Assumption Test

Normality Test

Table 5. Normality Test Result

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		60
Normal Parameters[a,b]	Mean	0,0000000
	Std. Deviation	0,44774201
Most Extreme Differences	Absolute	0,113
	Positive	0,074
	Negative	-0,113
Test Statistic		0,113
Asymp. Sig. (2-tailed)[c]		0,055

The data distribution is normal if the significance (Sig) is greater (> 0.05). Based on table 5, the Kolmogorov-Smirnov value is significant at $0.055 > 0.05$, thus the residual data is normally distributed.
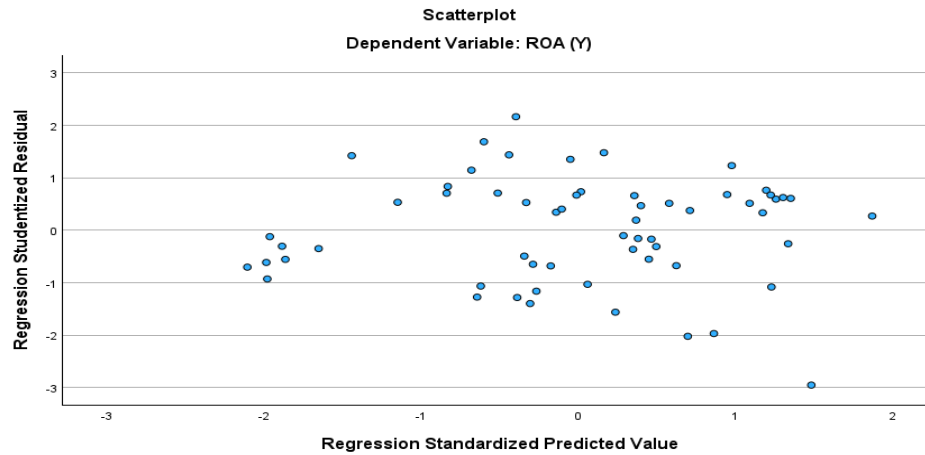
Heteroscedasticity Test

Figure 3. Heteroscedasticity Test Result

Based on the scatterplot image, the points are spread above and below the number 0 on the Y axis, so it is concluded that there is no heteroscedasticity, meaning that the regression model used for this study is feasible to be carried out.

Multicollinearity Test

The criteria for the Variance Inflation Factor value of less than (<10.00) does not cause multicollinearity or see the value at Tolerance is greater (>0.1).

Table 6. Multicollinearity Test Result

Model	Collinearity Statistics		Decision
	Tolerance	VIF	
P2P LENDING (X1)	0,634	1,578	there is no multicollinearity
BANK DIGITALIZATION (X2)	0,593	1,687	there is no multicollinearity
NPL (X3)	0,903	1,108	there is no multicollinearity

Autocorrelation Test

Table 6. Autocorelation Test Result

Annotation	Value	Decision
DW stat	2,024	There is no autocorrelation

From table 6, the dL value = 1.480, dU value = 1.689, and 4-DU value = 2.311 are obtained. The dU value in the DW table based on k (3) and N (60) with Sig 5% is dU (1.689) < Durbin Watson (2.024) < 4-dU (2.311), so it is concluded that there is no autocorrelation symptom

Multiple Linear Regression Analysis

Table 7. Multiple Linear Regression Test Result

Model	Regression Coefficient	t account	t table	Sig.	Decision
(Constant)	5.040	7.314	2.003	<,001	-
P2P LENDING (X1)	-4,98E-03	-2.748	-2.003	.008	Have a significant influence
BANK DIGITIZATION (X2)	7,35E-05	1.074	2.003	.288	Does not have a positive and significant effect
NPL (X3)	-.732	-3.659	-2.003	<,001	Have a significant influence

Y = 5.040 – 4.981E-6 P2P + 7.348E-8 BD – 0.732 NPL

From the table 7, The constant coefficient value is 5.040 with a positive value, which means that the large value of the regression of Banking Performance ROA shows positive results. The regression coefficient value of X1 is -4.981E-6, meaning that the direction of the influence of P2P Lending is opposite to ROA. Every 1% increase in P2P Lending can reduce ROA by -4.981E-6 if other variables remain constant. The regression coefficient value of X2 is 7.348E-8, meaning that every 1% increase in Bank Digitization has an impact on increasing ROA by 7.348E-8 if other variables remain constant. The regression coefficient value of X3 is -0.732, meaning that the direction of the influence of NPL is opposite to ROA. Every 1% increase in NPL can reduce ROA by -0.732 assuming other variables remain constant.

The Influence of Peer-to-Peer Lending on Return on Assets at KBMI Commercial Bank 4

The results of the hypothesis test through the t-test, the P2P Lending variable has a negative and significant effect on Return on Assets. This can be seen from the calculated t value > t table = (-2.748) > (-2.003) and Sig 0.008 <0.05. So, it can be concluded that individually and significantly P2P Lending has a negative effect on Return on Assets in general banks in the KBMI 4. In line with the research of [27] Fintech P2P lending has a significant influence on bank income. The direction of the relationship itself is negative. Indonesian fintech P2P lending startups have the potential to beat the established conventional banking market [28]. Supported by [29] Financial technology measured using P2P lending has a negative and significant effect on profitability (ROA), P2P lending which is an alternative loan platform from banks. The influence of P2P Lending was

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[27] Panglipursari, Ratnawati, and Pristiana.

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[29] Saputra and others.

further studied by [30] getting the results that FinTech Loans have a negative impact on bank market power, the arrival of FinTech companies in the credit market has led to an increase in the level of competition. In line, the impact of alternative digital loans provided by Big-Tech and FinTech significantly negatively impacted the performance of banking[31]. This finding also suggests that the synergy between fintech lending and banks will improve bank credit quality [32]. The results differ from [33] that the variable Amount of Loans has a negative but insignificant effect on ROA in the long term. This indicates that bank performance will decline if fintech companies continue to expand and distribute loans. Initial findings by [34] suggest that FinTech lenders are not replacing banks, perhaps because banks are developing their own FinTech platforms or partnering with FinTech startups. Banks need to anticipate developments in terms of both the number of borrowers and lenders through fintech P2P lending [35]. P2P lending, a new element of digital finance that connects lenders and borrowers through an online platform, has generated huge profits for investors [36]. KBMI Category 4 Banks must be able to carry out Product Innovation: Banks can develop more flexible and attractive loan products, such as competitive interest rates or easier application requirements to compete with P2P lending. In addition, Banks need to establish Partnerships: Some banks choose to partner with P2P lending platforms, either by providing funding or with technology that supports P2P operations. It is also important to maximize market niches Market Segment Approach: Focus on specific market segments that may be underserved by P2P lending, such as small businesses or premium segments with special needs.

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[36] Ly Nguyen, Mominul Ahsan, and Julfikar Haider, 'Reimagining Peer-to-Peer Lending Sustainability: Unveiling Predictive Insights with Innovative Machine Learning Approaches for Loan Default Anticipation', *FinTech*, 3.1 (2024), 184–215 <https://doi.org/10.3390/fintech3010012>.

The Influence of Bank Digitization on Return on Assets at KBMI Commercial Bank 4

The results of the hypothesis test through the t-test, the Bank Digitization variable does not have a positive and significant effect on Return on Assets. The calculated t value <t table = 1.074 <2.003 and the Sig value 0.288> 0.05 were obtained. So, it can be concluded that individually and significantly Bank Digitization does not have a positive effect on Return on Assets in general banks in the KBMI 4. The implementation of digital transformation in banking companies shows that there will be a decrease in ROA. The more digital technology is implemented, the lower the ROA value will be [37]. The issue of resources and technology infrastructure is a significant investment, but the business results of investing in digital transformation may not be immediately visible [38]. In contrast, research findings show that digital transformation is strongly influenced by ROA. [39]. Likewise, findings show that digitization currently has the greatest impact on profitability in large Russian banks. It was concluded that currently, for the largest and most populous banks, a high level of digital maturity is a competitive advantage [40]. Similar research found that the influence of digitization from the indicator of the number of online transactions has a positive relationship with ROA in Indian banks, but the number of online transactions has a negative relationship with ROA [41]. Subsequent research showed that digital banking has a positive and insignificant impact on the performance of commercial banks in Nigeria [42]. The scope of digitization has an insignificant positive regression relationship with Bank Financial Performance ROA in

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[37] Isma Coryanata and others, 'Digitalization of Banking and Financial Performance of Banking Companies', *International Journal of Social Service and Research*, 3.2 (2023), 366–71 <https://doi.org/10.46799/ijssr.v3i2.254>.

[38] Lan Nguyen-Thi-Huong and others, 'How Does Digital Transformation Impact Bank Performance?', *Cogent Economics and Finance*, 11.1 (2023) <https://doi.org/10.1080/23322039.2023.2217582>.

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Pakistan [43]. KBMI Category 4 banks continue to focus on developing Service Digitization: Improving digital services and user experience to make it easier for customers to access banking services, such as intuitive mobile applications. Supported by Data Analytics and Technology: Leveraging big data and analytics to understand customer behavior and provide more targeted offers. By implementing these strategies, banks can remain relevant and competitive in this increasingly digital and diverse era.

The Influence of Non-Performing Loans on Return on Assets at KBMI Commercial Bank 4

The results of the hypothesis test through the t-test, the Non-Performing Loan variable has a negative and significant effect on Return on Assets. The calculated t value is obtained > t table = = -.2.3659 > -2.003) and Sig 0.001 <0.05. So, it can be concluded that individually and significantly Non-Performing Loans have a negative effect on Return on Assets at KBMI 4 general banks. In line with [44], that there is a negative and significant effect of NPL on ROA. This negative and significant effect illustrates that every increase in NPL will cause a decrease in ROA. NPL have a negative and significant effect on Profitability in Banking Companies listed on the Indonesia Stock Exchange (IDX) [45]. The most significant finding is that the impact on bank profitability differs according to the proxy used for capital adequacy. Furthermore, the measure of bank profitability is inversely affected NPL. [46]. Supported by [47] NPL has a negative and significant impact on profitability. This study reveals that NPL has a negative relationship but does not have a significant impact on the profitability of commercial banks in Bangladesh. An increase in the NPL ratio reduces bank profitability [48]. In contrast to the

[43] Jahanzaib Sultan and others, 'Effect of Digitalisation on Bank's Financial Performance in Pakistan', *Pakistan Journal of Humanities and Social Sciences*, 11.2 (2023), 1377–92 <https://doi.org/10.52131/pjhss.2023.1102.0445>.

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[46] Adel A. Al-Sharkas and Tamara A. Al-Sharkas, 'The Impact on Bank Profitability: Testing for Capital Adequacy Ratio, Cost-Income Ratio and Non-Performing Loans in Emerging Markets', *Journal of Governance and Regulation*, 11.1 special issue (2022), 231–43 <https://doi.org/10.22495/jgrv11i1siart4>.

[47] Md. Kamal Uddin, 'Effect of Leverage, Operating Efficiency, Non-Performing Loan, and Capital Adequacy Ratio on Profitability of Commercial Banks in Bangladesh', *European Journal of Business and Management Research*, 7.3 (2022), 289–95 <https://doi.org/10.24018/ejbmr.2022.7.3.1463>.

[48] Nguyen-Thi-Huong and others.

research of [49] that NPL do not have a significant effect on ROA. This means that although NPL are an indicator of the quality of loans that are repaid with fixed interest, other variables that can affect a company's ROA. Other findings credit distribution has a positive and significant influence on the profitability, indicate that the higher or lower the credit distribution activity will affect the bank's profitability. [50].

The Influence of Peer-to-Peer Lending, Bank Digitization, Non-Performing Loans on Return on Assets at KBMI Commercial Bank 4

The results of the hypothesis test through the F test, the variables P2P Lending, Bank Digitization, Non-Performing Loan simultaneously have a significant effect on Return on Assets at General Banks in Category KBMI 4. The calculated F value is obtained > F table = 14.275 > 2.76 and the Sig value <0.001 <0.05. It can be concluded that all independent variables P2P lending, digitization, and NPL affect the financial performance (ROA) of KBMI 4 commercial banks.

Simultaneous Test (F-test)

Table 6. F Test Results

F-statistic	Sig.	Decision
14,275	<,001[b]	Model Fit

From table 6, it is known that the calculated F value > F table = 14.275 > 2.76 and the Sig value <0.001 <0.05, It can be concluded that the variables P2P Lending, Bank Digitization, Non-Performing Loans, simultaneously have a significant effect on Return on Assets.

Coefficient of Determination Test (R^2)

Table 7. Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658[a]	.433	.403	.45958

From table 7, it is known that the R Square value is 0.433 or 43% which means that P2P Lending, Bank Digitization, Non-Performing Loans, simultaneously have a significant effect on Return on Assets with a value of 43%. The residue (100% - 43% =

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[49] Fauzi Ahmad Romadhon and Zuhrinal M Nawawi, 'Economic Reviews Journal', *Economic Reviews Journal*, 3.1 (2024), 96–108 <https://doi.org/10.56709/mrj.v3i2.220>.

[50] Anggy Khusnul Khatima and others, 'The Effect of Financial Technology (Fintech) on Banking Financial Profits in Indonesia (Case Study on BUMN Bank KBMI 4) THE EFFECT OF FINANCIAL TECHNOLOGY (FINTECH) ON BANKING FINANCIAL PROFITS IN INDONESIA (CASE STUDY ON BUMN BANK KBMI 4)', *Journal of Economics*, 12.1 (2023), 1407–14 <http://ejournal.seaninstitute.or.id/index.php/Ekonomi>.

57%) is caused by the influence of different variables outside the calculation of the bivariate regression model or external variables that are not objects.

CONCLUSION

P2P Lending has a negative and significant effect on Return on Assets at KBMI 4 Commercial Bank. Bank Digitization does not have a positive and significant effect on Return on Assets at KBMI 4 Commercial Bank. Non-Performing Loan has a negative and significant effect on Return on Assets at KBMI 4 Commercial Bank. Peer to Peer Lending, Bank Digitization, Non-Performing Loan simultaneously have a significant effect on Return on Assets at KBMI 4 Commercial Bank.

Contribution to the community: This article can assist the public, particularly those who utilize banking services, in understanding how Indonesia's major banks adjust to technological advancements (like peer-to-peer lending) and how this impacts their offerings. Additionally, it gives the public information on how non-performing loans and loan quality might impact the welfare and stability of banks. To compete with big banks, P2P lending faces both opportunities and obstacles, which this article might help companies in the fintech sector understand. Through peer-to-peer lending, it also facilitates the use of quicker or more inexpensive alternative funding by the public and business players.

The limitations of this study include the Specific Context of KBMI 4 which may make it difficult to generalize the research findings to other banks in different categories. Further research is needed using various other profitability indicators (Return on Equity, Net Interest Margin, and Asset Quality Ratio) which not only enrich the analysis of bank financial performance but also help in making better strategic decisions. Development of primary research is needed by assessing the Perception and Attitude of Banking Management towards P2P lending and Digitization: Not all bank management has a positive view towards P2P lending or digitization, which may affect the implementation of effective strategies.

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